

Single P-Channel MOSFET

DESCRIPTION

SMC3535K is the P-Channel logic enhancement mode power field effect transistor is produced using high cell density, advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation gate as 2.5V.

This device is suitable for use as a load switch or other general applications.

PART NUMBER INFORMATION

SMC 3535 K - TR G
 a b c d e

a : Company name.
 b : Product Serial number.
 c : Package code K: SOT-89
 d : Handling code TR: Tape & Reel
 e : Green produce code G: *RoHS Compliant*

FEATURES

$V_{DS} = -30V$, $I_D = -6.6A$

$R_{DS(ON)} = 45m\Omega (Typ.) @ V_{GS} = -10V$

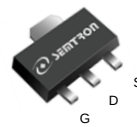
$R_{DS(ON)} = 52m\Omega (Typ.) @ V_{GS} = -4.5V$

$R_{DS(ON)} = 68m\Omega (Typ.) @ V_{GS} = -2.5V$

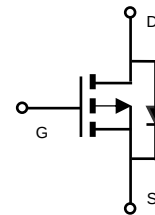
- ◆ Fast switch
- ◆ Low gate charge
- ◆ High power and current handling capability

APPLICATIONS

- ◆ Portable Equipment
- ◆ Power Management
- ◆ Load Switch



SOT-89



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$ Unless otherwise noted)

Symbol	Parameter		Rating	Units
V_{DSS}	Drain-Source Voltage		-30	V
V_{GSS}	Gate-Source Voltage		± 12	V
I_D	Continuous Drain Current	$T_A = 25^\circ C$	-6.6	A
		$T_A = 70^\circ C$	-5.3	A
I_{DM}	Pulsed Drain Current ^a		-26.4	A
P_D	Power Dissipation ^a	$T_A = 25^\circ C$	3.6	W
		$T_A = 70^\circ C$	2.3	W
T_J	Operation Junction Temperature		-55/150	$^\circ C$
T_{STG}	Storage Temperature Range		-55/150	$^\circ C$

THERMAL RESISTANCE

Symbol	Parameter		Typ	Max	Units
$R_{\theta JA}$	Thermal Resistance Junction to Ambient ^A	$t \leq 10s$		35	$^\circ C/W$
	Thermal Resistance Junction to Ambient ^{AC}	Steady-State		70	

ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$ Unless otherwise noted)

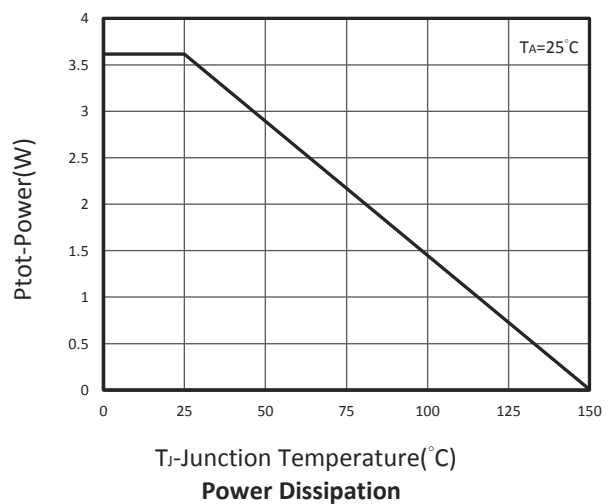
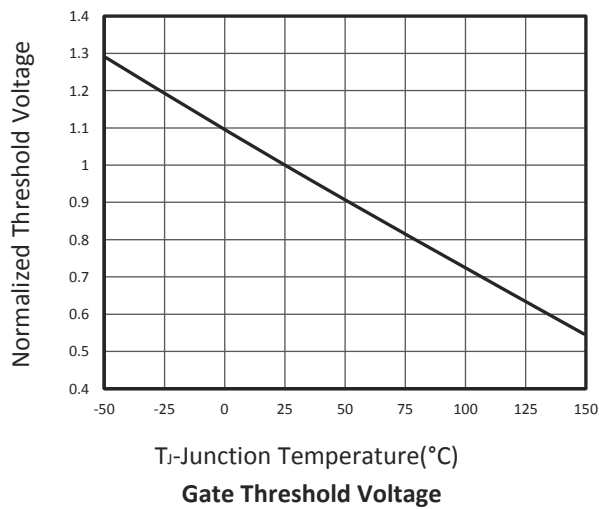
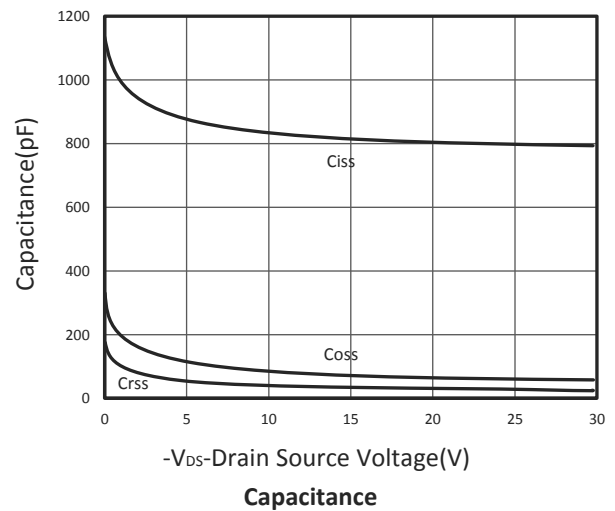
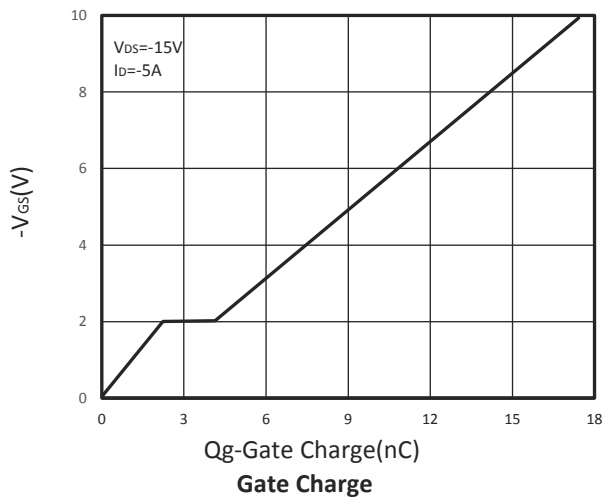
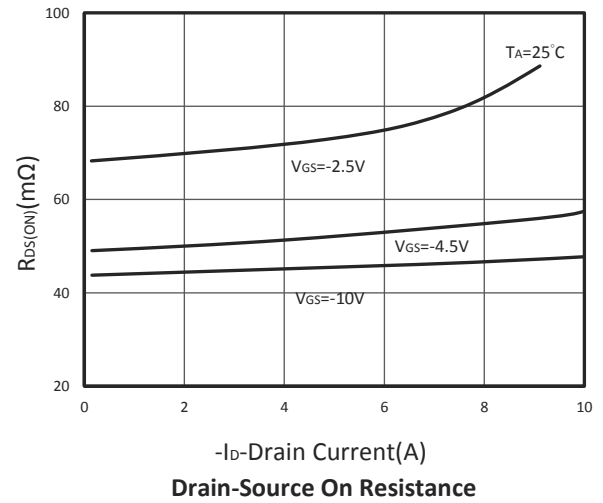
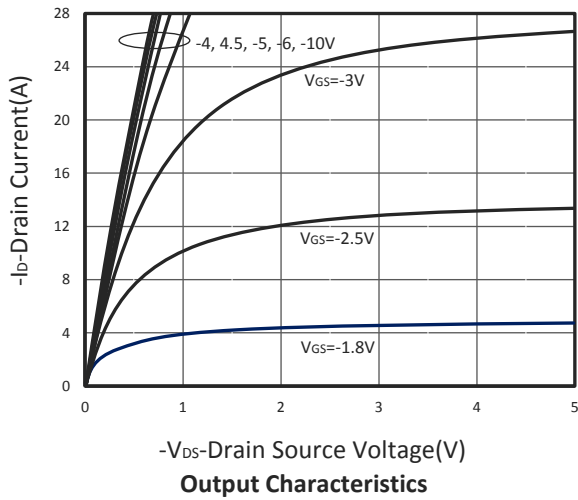
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250μA	-30			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	-0.5	-0.7	-1	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±12V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-30V, V _{GS} =0V, T _J =25°C			-1	μA
		V _{DS} =-24V, V _{GS} =0V, T _J =75°C			-10	
R _{DS(ON)}	Drain-source On-Resistance °	V _{GS} =-10V, I _D =-6.6A		45	54	mΩ
		V _{GS} =-4.5V, I _D =-4A		52	62	
		V _{GS} =-2.5V, I _D =-3A		68	85	
G _{fs}	Forward Transconductance	V _{DS} =-10V, I _D =-5A		6		S
Diode Characteristics						
V _{SD}	Diode Forward Voltage °	I _S =-1A, V _{GS} =0V			-1	V
I _S	Diode Continuous Forward Current				-3.3	A
Dynamic and Switching Parameters ^E						
Q _g	Total Gate Charge	V _{DS} =-15V, V _{GS} =-10V,I _D =-5A		17.4	24.4	nC
Q _g	Total Gate Charge (4.5V)			8.5	11.5	
Q _{gs}	Gate-Source Charge			2.1	2.8	
Q _{gd}	Gate-Drain Charge			1.5	2.1	
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1MHz		805		pF
C _{oss}	Output Capacitance			78		
C _{rss}	Reverse Transfer Capacitance			48		
t _{d(on)}	Turn-On Time	V _{DD} =-15V, V _{GEN} =-10V, R _G =6Ω, I _D =-1A		5.6	11	nS
t _r				21	40	
t _{d(off)}	Turn-Off Time			43.9	83	
t _f				10.8	21	

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

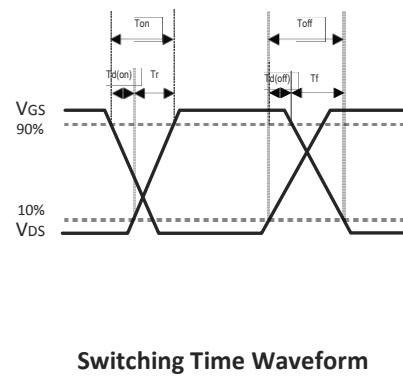
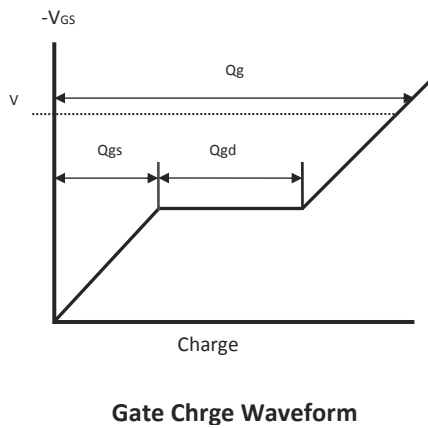
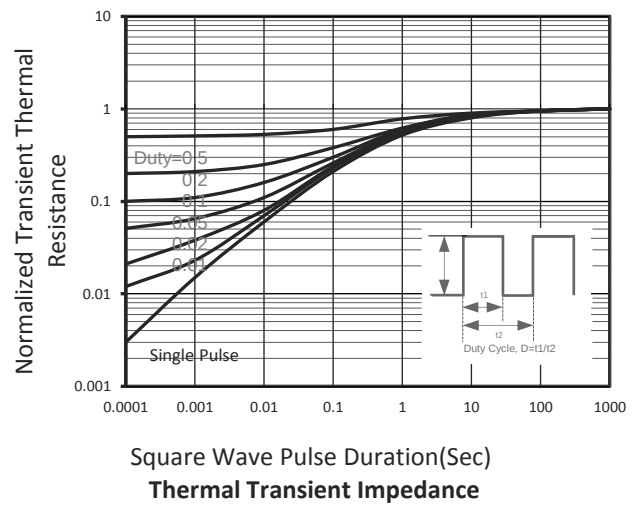
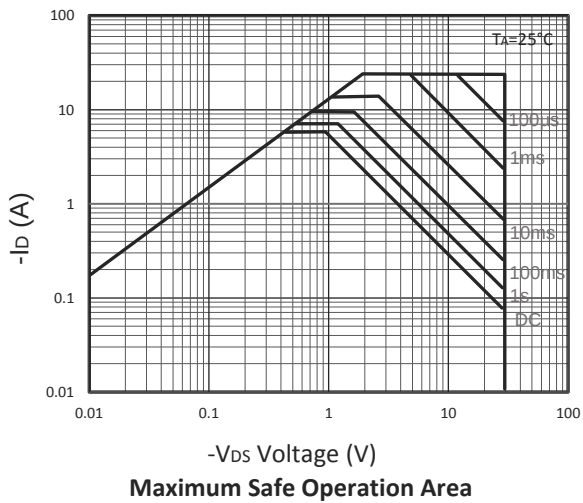
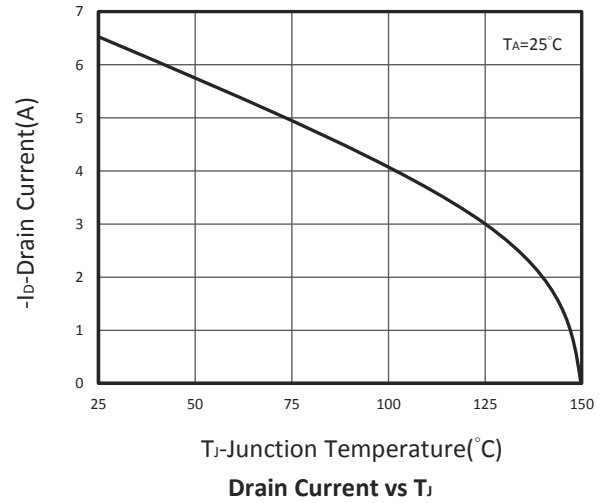
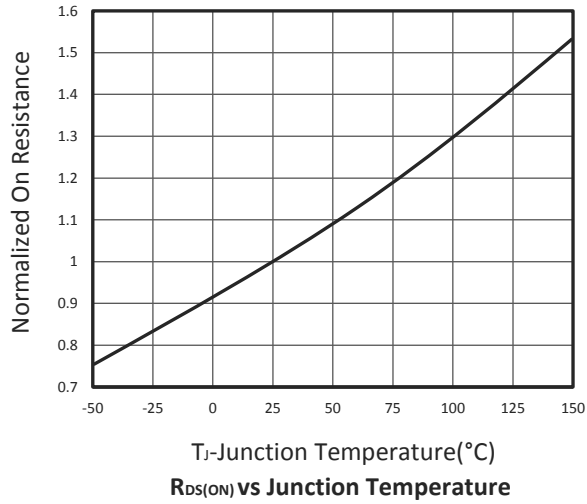
- A. Surface mounted on FR4 board using 1 in² pad size.
- B. Pulsed width limited by maximum junction temperature, T_{J(MAX)}=150 $^{\circ}$ C (initial temperature T_J=25 $^{\circ}$ C).
- C. Using $\leq$ 10s junction-to-ambient thermal resistance is base on T_{J(MAX)}=150 $^{\circ}$ C.
- D. Pulse test width $\leq$ 300 μ s and duty cycle $\leq$ 2%.
- E. Guaranteed by design, not subject to production testing.

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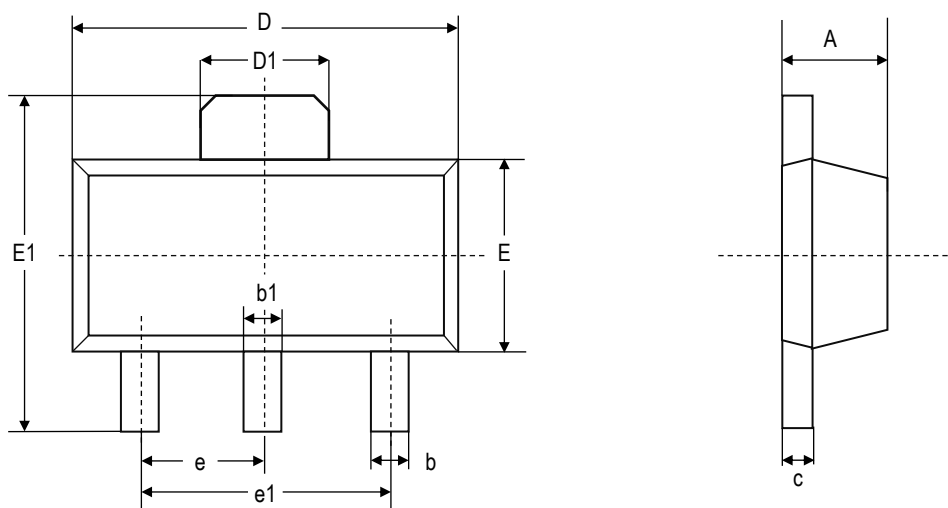
TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS



■ SOT-89 PACKAGE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.440	1.540	0.567	0.606
b	0.350	0.450	0.138	0.177
b1	0.450	0.550	0.177	0.217
c	0.350	0.450	0.138	0.177
D	4.450	4.550	1.752	0.791
D1	1.650	1.750	0.650	0.689
E	2.450	2.550	0.965	1.004
E1	3.950	4.250	1.555	1.673
e	1.450	1.550	0.571	0.610
e1	2.900	3.100	1.142	1.220
L	0.900	1.200	0.354	0.472
θ	2°	10°	2°	10°